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[Claims]

[Claim 1] It is formed in a lumen of a catheter so that insertion is possible, A catheter with the trocar, wherein trocar which consists of a trocar inner needle used inserting in a trocar outer tube and this lumen part or said trocar inner needle, and that into which a trocar outer tube was really molded and said trocar inner needle make a split face at least a part of outside surface of trocar which is not hollow.

[A detailed explanation of the device]

[0001]

[Industrial Application]

This design is related with the catheter with the trocar used in order to mainly carry out the effluent of pleural effusion and the ascites especially, more nearly respectively than the thorax and the abdominal cavity about the catheter with the trocar of a medical device.

[0002]

[Description of the Prior Art]

The catheter with the trocar is the medical equipment for performing exclusion of the puncture of abdomen for the ascites exclusion as diagnosis and the therapy of intraperitoneal reservoir liquid, and pleural effusion, and the thoracentesis for diagnosis or deaeration of pneumothorax.

The case where it is operated in an emergency, and long-term detention may be performed, and it is widely used by the medical field.

Therefore, operation can be done safely and easily and what can stop damage to an organization to the minimum is demanded further.

[0003]

The conventional catheter with the trocar for meeting these demands is a thing in the state where it was [the trocar which consists of a trocar inner needle which has an acute-shaped tip part, and a trocar outer tube which has a lumen part in which this inner needle is inserted] close, and it was inserted in the field of most lumens of a catheter. And the trocar is formed with metal, such as stainless steel or aluminum, and the catheter is formed with flexible plastics, such as PVC (polyvinyl chloride) and PUR (polyurethane). In this case, from the consideration which the trocar wants to slide smoothly to a catheter, the outside surface of the trocar is formed in mirror

finished surface form, and the inner surface of the catheter lumen is similarly finish-machined by the smooth state.

[0004]

[Problem(s) to be Solved by the Device]

In the above conventional catheters with the trocar. the outside surface of the trocar is a mirror plane, since the medial surface of the catheter which get together is also boiled smoothly and is finished, when extracting the trocar from a catheter or letting it pass to a catheter, it may stretch mutually, it may attach and smooth sliding operation may not be able to be performed. The trocar is metal although this was a situation contrary to what is called expectation.

When a catheter was furthermore a product made from flexible plastics, it becomes easy to stick a trocar outside surface and the catheter inner surface of each other, and it had become a problem that a motion of a catheter and the trocar becomes less smooth as a result, and safe and easy operation cannot be performed easily.

[0005]

Made in order that this design might solve the above problems, the construction material of the trocar or a catheter aims at providing a catheter with [same / smooth / a motion / and safe / but] the trocar.

[0006]

[Means for Solving the Problem]

A catheter with the trocar concerning this design is formed in a lumen of a catheter so that insertion is possible, Trocar or a trocar inner needle which consists of a trocar inner needle used inserting in a trocar outer tube and this lumen part, and that into which a trocar outer tube was really molded and a trocar inner needle make a split face at least a part of outside surface of trocar which is not hollow.

[0007]

[Function]

In this design, since all or some of outside surfaces of the trocar were made into the split face and the touch area of the trocar and a catheter becomes smaller than an adhesion condition, the adhesion between both worsens. Although adhesion worsens, since relative roughness of a split face is made into the thing about [beyond it] ***** to break down a mirror plane into thru/or a split face in this case, it is in the state which a fluid does not pass, and let the motion at the time of the insertion and extraction in the catheter lumen of the trocar be a smooth thing in the state where there is handy friction.

[0008]

[Example]

Drawing 1 is a top view showing one working example of the catheter with the trocar by this design. However, compared with the thing of the former [top / appearance], a functional

changed part in particular does not have a catheter with the trocar of drawing 1. And drawing 2 is an expanded sectional view of the tip end part of the catheter with the trocar of drawing 1. Drawing 3 is a top view showing the portion of the trocar which carried out extraction from the catheter of the catheter with the trocar of drawing 1.

[0009]

First, in drawing 1, the trocar 1 which connected with the hub 5 and was provided is inserted in the lumen of the catheter 3, and the tip part is set in the state where it ***** (ed) for a while from the tip of the catheter 3, and it constitutes the catheter with the trocar. The catheter 3 is the adapter 4 and really constituted and the tip of the catheter 3 has the end chip 2 which has the level difference 2a so that drawing 2 in which the tip part is shown may see. The trocar 1 consists of the trocar outer tube 7 and the trocar inner needle 6 currently inserted in the lumen part, and the tip of the trocar 1 inserted in the lumen of the catheter 3 from the adapter 4 side is set so that the level difference 2a may serve as a stopper and may not project any more. The trocar 6 has the centrum 6a like a hypodermic needle (not shown), and serves as tip shape [like a hypodermic needle] in which the tip part is also.

[0010]

The trocar 1 other than above-mentioned working example is metal as [all] usual, although some which are not hollow have the trocar inner needle 6, and that into which the trocar outer tube 7 was really molded and the trocar inner needle 6. And there is an advantage to which, as for a thing in the air, the trocar inner needle 6 can carry out medical aid, such as chemical feeding, via the centrum 6a if needed also with this state, i.e., the state of drawing 1, like this example.

[0011]

In this design, it shall have the split-face portion 8 in the outside surface of the trocar outer tube 7 which touches the lumen of the catheter 3 as shown in drawing 3. Although this split-face portion 8 had become a mirror plane of ***** by mirror finish conventionally, as shown in a figure, the whole surface of the trocar outer tube 7 is processed on a split face. From the fine thing which broke down the mirror-finished-surface-form voice of the grade which ***** (ed), for example to the comparatively coarse split face about [fine] the letter of knurl finishing can use it, the grade, i.e., the surface roughness, of a split face.

The split-face portion 8 may be formed in a part of outside surface other than the above whole surface. However, in some cases, it is necessary to make the peak part of a split face somewhat higher than a mirror plane portion.

[0012]

Next, operation is explained. In use of the catheter with the trocar by this design, A puncture is carried out, like drawing 1, where the trocar 1 and the catheter 3 are set, it is accepted after [a puncture] trocar 1 and extracts from a tip part, and the catheter 3 with adapter 4 is detained in the inside of the body, and various medical aid performed via the catheter 3 is carried out.

Although the adapter 4 is connected to the device and others for an effluent etc., since the details do not have the gist and relation of this design directly, explanation is omitted.

[0013]

In this case, for example.

[0014]

Namely, since there was no split-face portion 8 conventionally, the outside surface of the trocar outer tube 7 and the inner surface of the catheter 3 are vine New Zealand spinach sides mutually and also the construction material of the catheter 3 is elasticity in PVC, PUR, etc., Each stuck, and when extraction of the trocar 1 was carried out from the catheter 3 or it let the trocar 1 pass to the catheter 3 conversely, there was a case where a motion was not smooth. Besides solving these problems, in the case of thin size, it was going to prevent bending of the trocar 1 at the time of a puncture, and there was a request of liking to make the outer diameter of the trocar 1 as thick as possible, for example. Since the crevice between catheter inner surfaces became smaller and the problem of becoming further easy to stick arose when it was going to fulfill this, this design tended to solve this and formed the split-face portion 8 in the outside surface of the trocar outer tube 7, but. The result convenient as mentioned above was able to be acquired by assemblage of this split-face portion 8.

[0015]

[Effect of the Device]

According to this design, it is made to make all thru/or some of outside surface of the trocar which touches the lumen of the catheter of a catheter with the trocar into a split face as mentioned above, Since the split-face portion 8 formed in the outside surface of the trocar outer tube 7 of the trocar 1 when extraction only of the trocar 1 was carried out after inserting the trocar 1 in the catheter 3 a priori or carrying out a puncture to the inside of the body in this state, Adhesion with the trocar outer tube 7 and the lumen of the catheter 3 is prevented, and without stretching mutually and attaching, smooth operation is attained and it is effective in the safe catheter with the trocar of operativity being obtained.

[Brief Description of the Drawings]

[Drawing 1]It is a top view showing one working example of the catheter with the trocar by this design.

[Drawing 2]It is an expanded sectional view of the tip end part of drawing 1.

[Drawing 3]It is a top view of the trocar of this design.

[Description of Notations]

1 Trocar

2 End chip

2a Level difference

3 Catheter

4 Adapter

5 Hub

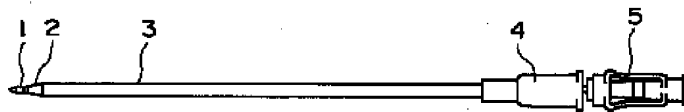
6 Trocar inner needle

6a Centrum

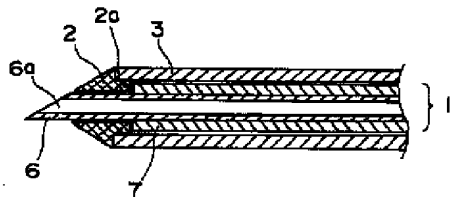
7 Trocar outer tube

8 Split-face portion

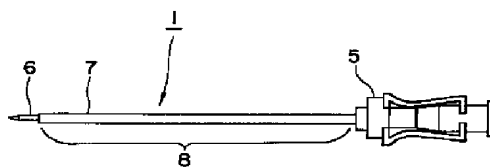
[Drawing 1]



[Drawing 2]



[Drawing 3]



[Translation done.]